AMENDMENTS TO THE CLAIMS

The following is a complete, marked up listing of revised claims with a status identifier in parentheses, underlined text indicating insertions, and strikethrough and/or double brackets indicating deletions.

Listing of the Claims

1. (CURRENTLY AMENDED) A simulation system for training and assessing the performance of an endovascular procedure, the system comprising:

a control unit and an interface unit, said control unit being configured to communicate with said interface unit to simulate simultaneous handling of at least ~~one instrument~~two different instruments interfaced by said interface unit, wherein interface unit is configured to receive the at least two different instruments along two different axes arranged in a parallel manner,

wherein the control unit includes a database of vessels interconnected in a hierarchical structure, each vessel having a diameter and a stiffness,

said instrument being a tool expandable in a simulated vessel, whereby when said tool is expanded, a simulated geometry of said vessel changes resulting in a simulated fluid flow change in the simulated vessel,

said simulated fluid flow change affecting fluid flow changes in adjacent simulated vessels,

the system being configured to recursively calculate said simulated fluid flow in the simulated vessel and the fluid flow changes in said adjacent simulated vessels, the recursive calculation being a function of at least one parameter, wherein at least one parameter is a result of a real time simulation of a heart function, and

the system being further configured to provide the simulated fluid flow change in real time.

2. (CANCELLED)

3. (CURRENTLY AMENDED) The system of claim 1, wherein said ~~instrument is~~instruments are one selected from the group consisting of a balloon, stent ~~or~~and a distal protection tool.

4. (PREVIOUSLY PRESENTED) The system of claim 1, wherein each of the plurality of vessels is realized by a tubular geometry and a specific stiffness.

5. (PREVIOUSLY PRESENTED) The system of claim 1, wherein the plurality of vessels are realized by lesions having different stiffness than neighboring vessel parts.

6. (PREVIOUSLY PRESENTED) The system of claim 1, wherein the system is configured to calculate a flow through the hierarchal structure realized as a vessel-tree as a result of a geometry of the vessel-tree.

7. (CURRENTLY AMENDED) A method of simulating flow of a body fluid in a simulation system for training and assessing the performance of an endovascular procedure where the simulation system includes a control unit and an interface unit, said control unit being configured to communicate with said interface unit to simulate simultaneous handling of at least ~~one instrument~~two different instruments interfaced by said interface unit, wherein interface unit is configured to receive the at least two different instruments along two different axes arranged in a parallel manner, the method comprising the steps of:

- providing a database of vessels having a hierarchical structure in said control unit, wherein each vessel has a diameter and a stiffness;

- providing said ~~instrument~~ instruments as ~~a tool~~tools expandable in a simulated vessel;

- changing a simulated geometry of said simulated vessel resulting in a simulated fluid flow change when said ~~tool~~ tools is expanded; and

recursively calculating a fluid flow of said vessels having the hierarchical structure until flow and pressure in all branches of said hierarchical structure are solved, the recursive calculation being a function of at least one parameter, wherein at least one parameter is a result of a real time simulation of a heart function, and the simulated fluid flow change is provided by the simulation system in real time.

8. (PREVIOUSLY PRESENTED) The method of claim 7, wherein the flow simulation is modeled as an electrical resistive network.

9. (PREVIOUSLY PRESENTED) The method of claim 8, wherein potentials correspond to pressure, currents correspond to flow and electrical resistance corresponds to fluid resistance.

10. (PREVIOUSLY PRESENTED) The method of claim 9, wherein a top of the fluid network is realized in a left ventricle of a heart, and a bottom of the network is in veins connecting to a right atrium of the heart.

11. (CANCELLED)

12. (CURRENTLY AMENDED) The system of claim 1, wherein said at least ~~one instrument is~~two instruments are ~~a~~ real ~~instrument~~instruments.

13. (CURRENTLY AMENDED) The method of claim 7, wherein said at least ~~one instrument is~~two instruments are ~~a~~ real ~~instrument~~instruments.

14. (CURRENTLY AMENDED) A simulation system for training and assessing the performance of an endovascular procedure, the system comprising:

a control unit and an interface unit, said control unit being configured to communicate with said interface unit to simulate simultaneous handling of at least two different instruments interfaced by said interface unit, wherein interface unit is configured to receive the at least two different instruments along two different axes arranged in a parallel manner,

wherein the control unit includes a database of simulated vessels arranged in a hierarchical structure,

said at least two instruments are tools expandable in the simulated vessels, whereby when one of said tools is expanded, a simulated geometry of one of said vessels changes resulting in a simulated fluid flow change in the simulated vessels,

the system is configured to recursively calculate said simulated fluid flow in the simulated vessels and fluid flow changes in adjacent simulated vessels, the recursive calculation being a function of at least one parameter, wherein at least one parameter is a result of a real time simulation of a heart function, and

the system is further configured to provide the simulated fluid flow change in real time.

15. (CANCELLED)

16. (PREVIOUSLY PRESENTED) The system of claim 14, wherein said at least two instruments are real instruments.

THE END OF THE CLAIM LISTING